Adaptivity Considered Harmful?
Issues in the Interaction between Users and Adaptive Systems.

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Abstract

In human-computer interaction, 'mental models' are constructs that represent the end users' understanding of an interactive system: they are users' internal representations of a system, based on their prior experiences with it, or with similar technology [1]. 'Traditional' mental models are based on the users' evolving understanding of a stable interactive system. However, modern adaptive systems become more and more intelligent, adapting their behaviour to the end users' behaviour. This adaptivity can make it more difficult for end users to predict the system's behaviour, and construct an accurate mental model based on their previous experiences [3]. As understandable, transparent system behaviour is the first step towards meaningful interactions, it is important that adaptive systems help their users in understanding how they work [2].

Two case studies will be presented[1], illustrating some of the issues involved in facilitating end user understanding of adaptive systems. The ALADIN (IWT, 2011-2014) project aims to develop an assistive vocal interface for people with a physical impairment. This vocal interface is trained by the user: the system adapts to the end user's vocabulary, grammar, and speech. As the ALADIN interface is trained over time to become better at understanding the user, it is an important challenge to communicate to users what the system can and cannot understand or do.

In the MAPLE project (iMinds, 2009-2011), an adaptive mobile platform for language learning was designed. The platform offered language exercises, and adapted the exercise difficulty based on the learner's score on previous exercises. Because of the adjusted exercise difficulty, learners always reach the same average score, even if their language proficiency improves. This kind of adaptivity required learners to revise the traditional link between increased proficiency and higher scores, as a student's score will not improve because the difficulty level increases. For designers, this presents a challenge to allow learners to keep track of their progress, and to keep them motivated.

References

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